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Advanced E-Ticketing And Bus Tracking System Using IOT &RFID For Public Transportation

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Abstract — Public transportation system introduces the safe and secure transportation for the passengers. The main objective of our project is to enhance the usability and productivity of existing bus transportation system which can done by using IOT technology. An improvement in the existing transport system is E -Ticketing and arrival time prediction of bus in real time, seat availability information and controlling the accidents. This provides high reliability to the passengers. This scheme does not require the conductor which reduces the man power. By using IR sensor we can measure the distance of target so that we can control the accidents. RFID reader is used for the passengers to enter and exit the bus. GPS is used for tracking the bus. DC Motor is used for the purpose of opening and closing the bus door. All the information like location of the bus, seats availability are retrieved through the IOT. LCD display is for displaying the no. of seats available in bus. Further it can implement by using smart card.

Key Words — GPS,IOT ,RFID, Keil Software

I INTRODUCTION

Public transportation system introduces the safe and secure transportation for the passengers. The main objective of our project is to enhance the usability and productivity of existing bus transportation system in India which can done by using IOT technology. An improvement in the existing transport system in India -E -Ticketing and arrival time prediction of bus in real time, seat availability information and controlling the accidents. This provides high reliability to the passengers. This scheme does not require the conductor which reduces the man power. By using IR sensor, we can measure the distance of target so that we can control the accidents. RFID reader is used for the passengers to enter and exit the bus. GPS is used for tracking the bus. Motor is used for the purpose of opening and closing the bus door. All the information like location of the bus, seats availability is retrieved through the IOT[1]. LCD display is for displaying no. of seats available in bus. Further it can have implemented by using smart card.

II EXISTING SYSTEM

In previous, we have used Hand held ticketing machine for the conductor.Accident information is intimated to nearest hospital using GPS tracking[1]&[2]. Next bus station is displayed along with the announcement on the LCD.

III.PROPOSED SYSTEM

Now, in our project, Ticketing system is implemented without human resources using RFID which can be rechargeable. Avoiding accident using IR sensor. Tracking the bus using GPS and uploading using IOT Availability of seats displayed in LCD and also uploaded in IOT.

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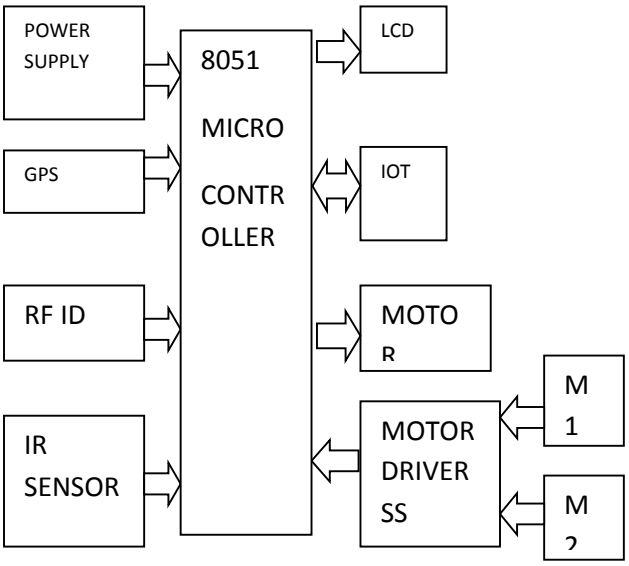

Fig.1 Block Diagram

IV. BLOCK DIAGRAM DESCRIPTION

A At89s52 Microcontroller

The AT89S52 has 4 different ports, each one having 8 Input/output lines providing a total of 32 I/O lines. Those ports can be used to output DATA and orders do other devices, or to read the state of a sensor, or a switch. Most of the ports of the AT89S52 have 'dual function' meaning that they can be used for two different functions. The first one is to perform input/output operations and the second one is used to implement special features of the microcontroller like counting external pulses, interrupting the execution of the program according to external events, performing serial data transfer or connecting the chip to a computer to update the software. Each port has 8 pins, And will be treated from the software point of view as an 8-bit variable called 'register', each bit being connected to a different Input/output pin.There 3are two different memory types: RAM and EEPROM. Shortly, RAM is used to store variable during program execution, while the EEPROM memory is used to store the program itself, that's why it is often referred to as the 'program memory'. It is clear that the CPU (Central Processing Unit) is the heart of the micro controllers.

It is the CPU that will Read the program from the FLASH memory and execute it by interacting with the different peripherals. Diagram below shows the pin configuration of the 89S52, where the function of each pin is written next to it, and, if it exists, the dual function is written between brackets. Note that the pins that have dual functions can still be used normally as an input/output pin. Unless the program uses their dual functions, all the 32 I/O pins of the microcontroller are configured as input/output pins.

B. DC Motor

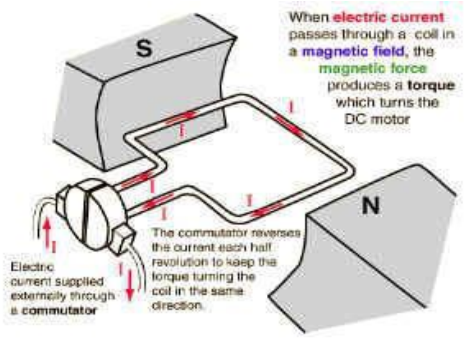

Fig.2. DC Motor

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The classic DC motor design generates an oscillating current in a wound rotor with a split ring commutator, and either a wound or permanent magnet stator. A rotor consists of a coil wound around a rotor which is then powered by any type of battery.Many of the limitations of the classic commutator DC motor are due to the need for brushes to press against the commutator. This creates friction.

At higher speeds, brushes have increasing difficulty in maintaining contact[2]. Brushes may bounce off the irregularities in the commutator surface, creating sparks. This limits the maximum speed of the machine. The current density per unit area of the brushes limits the output of the motor. The imperfect electric contact also causes electrical noise. Brushes eventually wear out and require replacement, and the commutator itself is subject to wear and maintenance. The commutator assembly on a large machine is a costly element, requiring precision assembly of many parts. There are three types of dc motor 1. Dc series motor 2. DC shunts motor 3. Dc compound motor - these are also two type a. cumulative compound b. deffercial compound

C. LCD

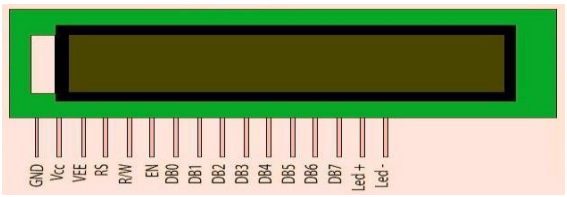

Fig.3. LCD display

LCD screen consists of 2 lines with sixteen characters every. Every character consists of 5x8 matrixes. Distinction on show depends on the facility provide voltage and whether or not messages area unit displayed in one or 2 lines. For that reason, variable voltage 0-Vdd is applied on pin marked as Vee. Trimmer potentiometer is typically used for that purpose. Some versions of displays have in-built backlight (blue or inexperienced diodes)[9]. Once used throughout operative, a resistance for current limitation ought to be used (like with any autoimmune disease diode).

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D. RFID Reader

Fig.4.RFID Reader

Before RFID can be understood completely, it is essential to understand how Radio Frequency communication occurs[3].RF (Radio Frequency) communication occurs by the transference of data over electromagnetic waves. By generating a specific electromagnetic wave at the source, its effect can be noticed at the receiver far from the source, which then identifies it and thus the information [4]. Thus, an RFID System can be visualized as the sum of the following three components:RFID tag or transponder RFID reader or transceiver Data processing subsystem.

E. IR Sensor

An infrared sensor is an electronic device, that emits in order to sense some aspects of the surroundings [7]. An IR sensor can measure the heat of an object as well as detects the motion. These types of sensors measures only infrared radiation, rather than emitting it that is called as a passive IR sensor. Usually in the infrared spectrum, all the objects radiate some form of thermal radiations. These types of radiations are invisible to our eyes, that can be detected by an infrared sensor. The emitter is simply an IR LED (Light Emitting Diode) and the detector is simply an IR photodiode which is sensitive to IR light of the same wavelength as that emitted by the IR LED. When IR light falls on the photodiode, the resistances and these output voltages, change in proportion to the magnitude of the IR light received.

Fig.5.IR Sensor

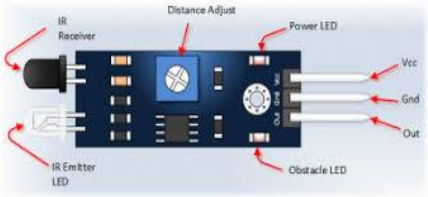

Fig.6.IR transmitter and receiver

F.IOT

The Internet of things (IoT) is the network of physical devices, vehicles, home appliances and other items embedded with electronics, software, sensors, actuators, and connectivity which enables these objects to connect and exchange data. Each thing is uniquely identifiable through its embedded computing system but is able to inter-operate within the existing Internet infrastructure.

The figure of online capable devices increased 31% from 2016 to 8.4 billion in 2017 Experts estimate that the IoT will consist of about 30 billion objects by 2020, It is also estimated that the global market value of IoT will reach $7.1 trillion by 2020.

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The IoT allows objects to be sensed or controlled remotely across existing network infrastructure, creating opportunities for more direct integration of the physical world into computer-based systems, and resulting in improved efficiency, accuracy and economic benefit in addition to reduced human intervention[7]. When IoT is augmented with sensors and actuators, the technology becomes an instance of the more general class of cyber-physical systems, which also encompasses technologies such as smart grids, virtual power plants, smart homes, intelligent transportation and smart cities.

"Things", in the IoT sense, can refer to a wide variety of devices such as heart monitoring implants, biochip transponders on farm animals, cameras streaming live feeds of wild animals in coastal waters, automobiles with built-in sensors, DNA analysis devices for environmental/food/pathogen monitoring, or field operation devices that assist firefighters in search and rescue operations. Legal scholars suggest regarding "things" as an "inextricable mixture of hardware, software, data and service".

These devices collect useful data with the help of various existing technologies and then autonomously flow the data between other devices.

The term "the Internet of things" was coined by Kevin Ashton of Procter & Gamble, later MIT's Auto-ID Center, in 1999.

G. GPS

Working Based on existing GSM/GPRS network and GPS satellites, this product can locate and monitor any remote targets by SMS or internet[1]&[8]. Vehicle rental / Fleet management etc ,Powerful magnet + water proof, adsorbing in the hidden place of car. Protect child / the old / the disabled / pet etc Provide peace-of-mind for businessmen

V.RESULTS

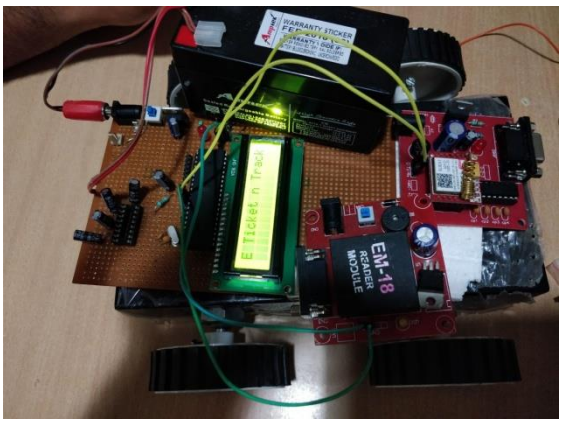

Fig.7.To give the power supply to the kit after that track the system and switch is ON

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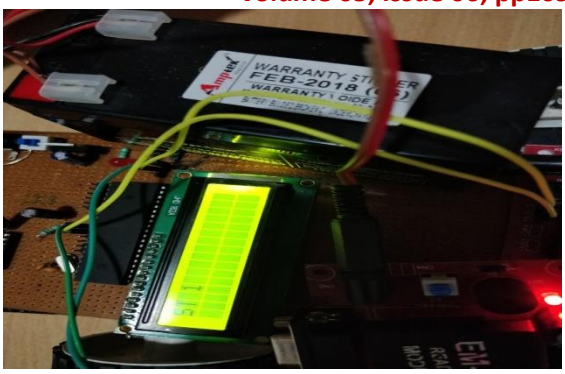

Fig.8. If station1 is arrived then motors will be automatically off (i.e. bus will be stopped)by showing station RFID.

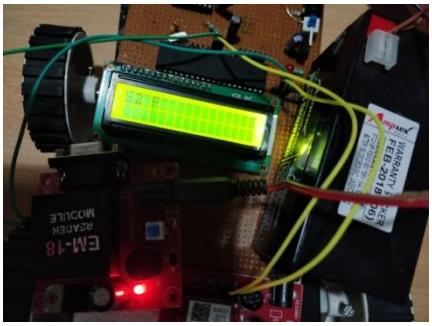

Fig.9 After reaching the station by shopping RFID the bus door will be opened and displays as seat 1 full

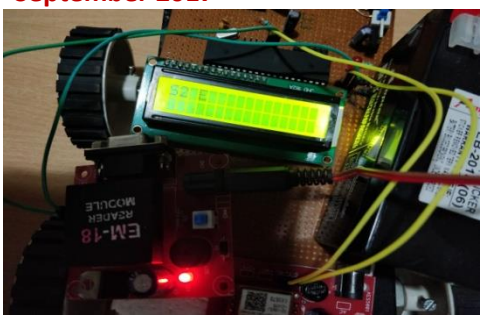

Fig.10 Again if we show same RFID will exiting it displays as seat 1 empty

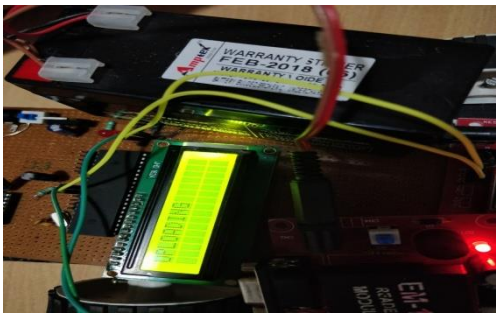

Fig.11 The location of the bus and the number of seats availability are uploaded through IOT

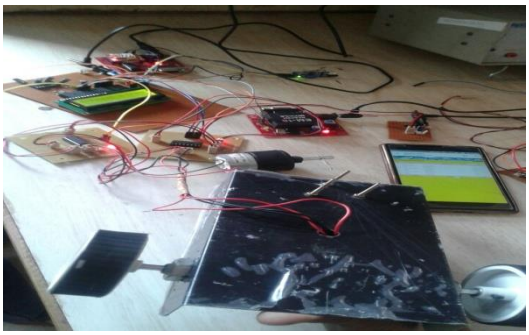

Fig.12 when their is an obstacle near to it ,then IR Sensor activities automatically the bus will be stops

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VI. CONCLUSSION

A man can do a mistake but a programmed processor doesn't have a chance of doing error. This is the main reason behind this project. This is a highly advanced technology.

The objective of this project has been achieved. The project we have undertaken has helped us gain a better perspective on various aspects related to our course of study as well as practical knowledge of electronic equipment and communication. We became familiar with software analysis, designing, implementation, testing and maintenance concerned with our project.

By using this advanced e ticketing and tracking, the timings of the bus will be exact and it avoids a lot of inconvenience to the passengers. This project will greatly reduce the human intervention in the control of bus and hence saves a lot of time and money. Thus the project is greatly useful in all aspects

VII. FUTURESCOPE

The bus ticketing in the current project is designed to run only through the RFID tags.Further E- ticketing can be implement by using smart card. Improve a vehicle as just like a computer with tires.

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